

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with David Nocilly on September 17, 2008.

The application has been amended as follows:

#### In the Specification:

Please amend Paragraph [0001] as follows:

[0001] This application is a continuation-in-part of U.S. Application Serial No. 10/053,103 filed January 17, 2002, now U.S. Patent No. 6,862,542 ~~entitled ERYTHEMA MEASURING DEVICE~~, incorporated herein by reference.

#### In the Claims:

1. (currently amended) A system for measuring erythema in a tooth, comprising:  
  
means for generating light of a first frequency;  
  
means for modulating said light of said first frequency to produce a modulated first light signal;

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~~transmitting means for transmitting said first light signal of said first frequency into said tooth;~~

~~detecting means for detecting shock waves induced in said tooth by said transmitted light of said first frequency;~~

~~processing means for processing said detected shock waves induced by said transmitted light of said first frequency to measure said erythema in said tooth;~~

means for generating light of a second frequency;

~~means for modulating said light of said first frequency to produce a modulated first light signal;~~

means for modulating said light of said second frequency to produce a modulated second light signal, wherein said modulated second light signal is different from said modulated first light signal;

~~said transmitting means being effective for transmitting said first and second light signal signals into said the tooth;~~

~~said detecting means being effective for detecting shock waves induced in said tooth by said transmitted light of said first and second light signals; and~~

~~said processing means being effective for processing said detected shock waves induced in said tooth by said transmitted light of said first and second light signals to measure said erythema in said tooth.~~

7. (currently amended) A system according to claim 1, wherein said first and second ~~frequencies of light~~ signals are transmitted into said tooth simultaneously.

8. (currently amended) A system according to claim 1, wherein at least one modulation frequency used in said means for modulating said light of said first frequency is in a range between 500 to 50,000 KHz.

9. (currently amended) A system according to claim 1, further comprising:  
means for generating light of a third frequency;  
means for modulating said light of said third frequency to produce a modulated third light signal which is different from said modulated first and second light signals;  
said means for transmitting ~~means~~ being effective for transmitting said third light signal into said tooth;  
said means for detecting ~~means~~ being effective for detecting shock waves induced in said tooth by said transmitted light of said first, second, and third light signals; and  
said means for processing ~~means~~ being effective for processing said detected shock waves induced in said tooth by said transmitted light of said first, second, and third light signals ~~to measure said erythema in said tooth.~~

11. (currently amended) A system for measuring erythema in a tooth, comprising:  
means for generating light of a first frequency;

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transmitting means for transmitting said light of said first frequency into ~~said~~ the tooth;

detecting means for detecting shock waves induced in said tooth by said transmitted light of said first frequency;

processing means for processing said detected shock waves induced by said transmitted light of said first frequency ~~to measure said erythema in said tooth;~~

means for generating light of a second frequency;

said means for transmitting ~~means~~ being effective for transmitting said light of said second frequency into said tooth;

said means for detecting ~~means~~ being effective for detecting shock waves induced in said tooth by said transmitted light of said second frequency; and

said means for processing ~~means~~ being effective for processing said detected shock waves induced in said tooth by said transmitted light of said first and second frequency to measure ~~said~~ erythema in said tooth;

wherein said first and second frequencies of light are transmitted into said tooth sequentially.

16. (currently amended) A system for measuring erythema in a tooth, comprising:

a first generator for generating light of a first frequency;

a probe which transmits said light of said first frequency into ~~said~~ the tooth;

a fiberoptic Fabry-Perot ultrasound sensor which detects shock waves induced in said tooth by said transmitted light of said first frequency; and

a processor which processes said detected shock waves induced by said transmitted light of said first frequency to measure ~~said~~ erythema in said tooth.

17. (currently amended) A system according to claim 16, wherein said probe includes a fiberoptic delivery portion surrounded by said ~~detector~~ ultrasound sensor.

18. (cancelled).

20. (currently amended) A system according to claim 16, further comprising a second ultrasound ~~detector~~ sensor for sensing said shock waves.

21. (currently amended) A system for measuring erythema in a tooth, comprising:

a first generator for generating light of a first frequency;

a probe which transmits said light of said first frequency into said the tooth;

a detector which detects shock waves induced in said tooth by said transmitted light of said first frequency;

a processor which processes said detected shock waves induced by said transmitted light of said first frequency to ~~measure said erythema in said tooth;~~

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a second generator for generating light of a second frequency;

a first modulator for modulating said light of said first frequency with a first pulse frequency;

a second modulator for modulating said light of said second frequency with a second pulse frequency;

wherein said probe transmits said modulated light of said first and second frequencies into said tooth;

said detector detects shock waves induced in said tooth by said transmitted modulated light of said first and second frequencies; and

said processor processes said detected shock waves induced by said transmitted modulated light of said first and second frequencies to measure ~~said~~ erythema in said tooth.

25. (currently amended) A system according to claim 21, wherein said first and second ~~frequencies of light~~ signals are transmitted into said tooth simultaneously.

27. (currently amended) A system according to claim 21, further comprising:

a third generator for generating light of a third frequency;

a third modulator for modulating said light of said third frequency with a third pulse frequency;

wherein said probe transmits said modulated light of said first, second, and third frequencies into said tooth;

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said detector detects shock waves induced in said tooth by said transmitted light of said first, second, and third frequencies; and

said processor processes said detected shock waves induced in said tooth by said transmitted light of said first, second, and third light frequencies ~~to measure said erythema in said tooth.~~

29. (currently amended) A system for measuring erythema in a tooth, comprising:

a first generator for generating light of a first frequency;

a probe which transmits said light of said first frequency into ~~said~~ the tooth;

a detector which detects shock waves induced in said tooth by said transmitted light of said first frequency;

a processor which processes said detected shock waves induced by said transmitted light of said first frequency ~~to measure said erythema in said tooth;~~

a generator for generating light of a second frequency;

wherein said probe transmits said modulated light of said first and second frequencies into said tooth;

said detector detects shock waves induced in said tooth by said transmitted light of said first and second frequencies; and

said processor processes said detected shock waves induced by said transmitted light of said first and second frequencies to measure ~~said~~ erythema in said tooth;

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wherein said first and second frequencies of light are transmitted into said tooth sequentially.

34. (currently amended) A method for measuring erythema in a tooth, comprising the steps of:

generating light of a first frequency;

transmitting said light of said first frequency into ~~said~~ the tooth;

detecting shock waves induced in said tooth by said transmitted light of said first frequency; and

processing said detected shock waves induced by said transmitted light of said first frequency to measure ~~said~~ erythema in said tooth

36. (currently amended) A method according to claim 34, further comprising the steps of:

generating light of a second frequency;

modulating said light of said first frequency to produce a modulated first light signal;

modulating said light of said second frequency to produce a modulated second light signal, wherein said modulated second light signal is different from said modulated first light signal;

transmitting said first and second light signals into said tooth;



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detecting shock waves induced in said tooth by said transmitted first and second light signals; and

processing said detected shock waves induced by said transmitted light of said first and second light signals ~~to measure said erythema in said tooth.~~

42. (currently amended) A method according to claim 36, further comprising the steps of:

generating light of a third frequency;

modulating said light of said third frequency to produce a modulated third light signal, wherein said modulated third light signal is different from said modulated first and second light signals;

transmitting said first, second, and third light signals into said tooth;

detecting shock waves induced in said tooth by said transmitted first, second, and third light signals; and

processing said detected shock waves induced by said transmitted light of said first, second, and third light signals ~~to measure said erythema in said tooth.~~

### ***Reasons For Allowance***

The following is an examiner's statement of reasons for allowance:

The claimed invention provides for transmitting at least a first frequency of light to a tooth for creating a shock wave in the tooth. A detection means then detects the shock wave. The detected shock wave is then processed in a processor in order to

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measure erythema in the tooth. The prior art fails to teach light induced shock waves and detection of said shock waves, followed by processing. The prior art further fails to utilize such methods and devices for using with teeth and for determination of erythema of a tooth.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES KISH whose telephone number is (571)272-5554. The examiner can normally be reached on 8:30 - 5:00 ~ Mon. - Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ruth S. Smith/  
Primary Examiner, Art Unit 3737

JMK